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Secure Mobile Apps in the Enterprise

Microsoft

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Agenda

Secure Mobile Apps in the Enterprise
01 | Overview
02 | Data
03 | Business Logic
04 | Authentication
05 | Push Notifications
06 | Best Practices for LOB apps & Resources

MVA jumpstart

Setting Expectations

- Target Audience
  - Developers building employee-facing apps
- Suggested Prerequisites/Supporting Material
  - Mobile Services on Channel9
  - Custom API, Script Source Control and Shared Scripts
  - Helpful links for advanced scenarios

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01 | Overview

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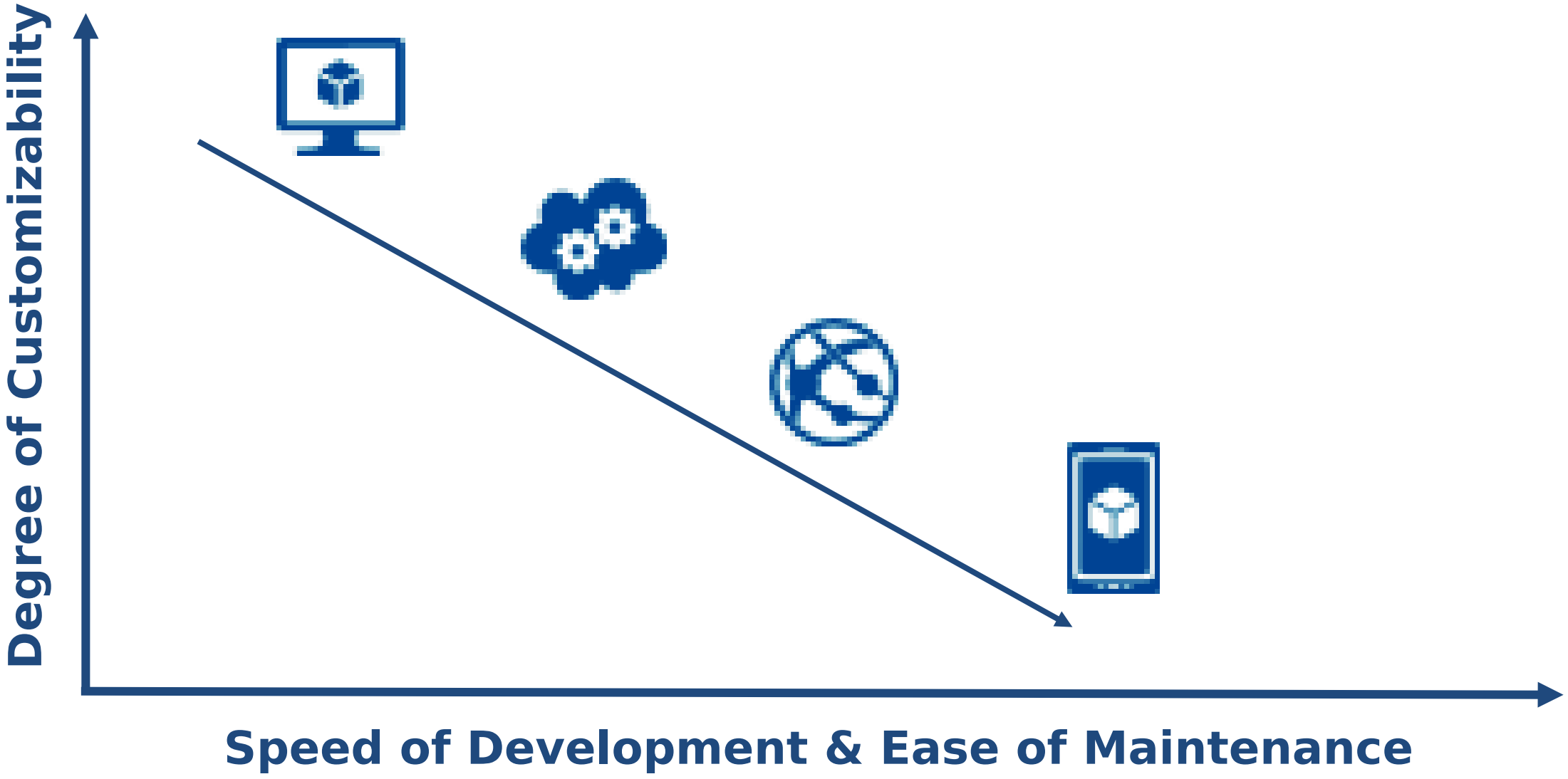
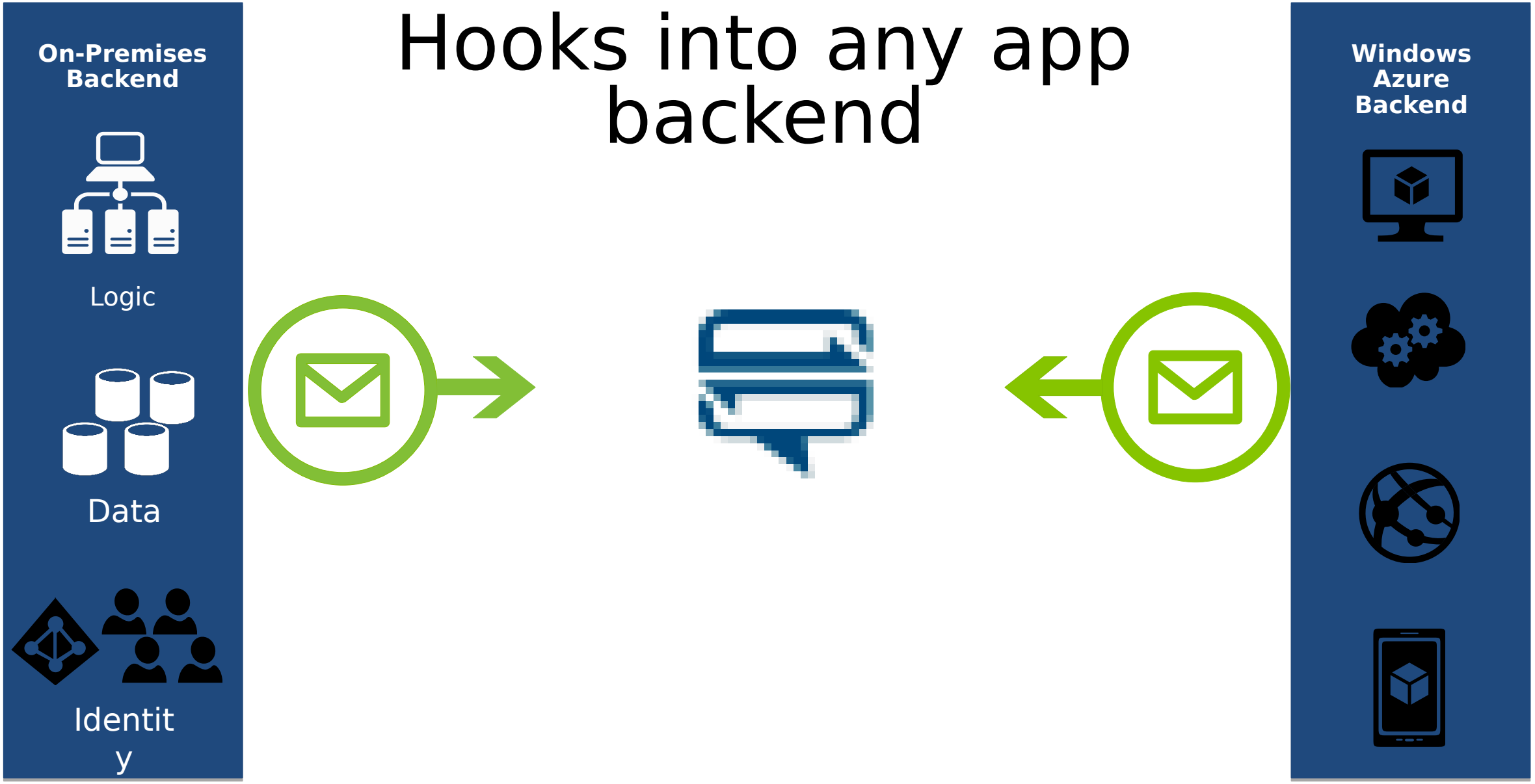
Mobile Backends in Azure



Virtual Machines	Webzen, NBC News Digital
Cloud Services	Glassboard, Aviva
Web Sites	Mural.ly
Mobile Services	Wedding Happy, Elan Skis

Hooks into any app backend



on-prem data & push

MyAccount

bill overview

current account balance

£84.52

overdue

RECURRING CHARGES	62.51
CALLS	7.92
OTHER CHARGES & CREDITS	0.00
AMOUNT IN QUERY	0.00
SUBTOTAL EXC VAT	70.43
VAT @ 20%	14.09
BALANCE BROUGHT FORWARD	0.00
TOTAL DUE FOR THIS BILL	84.52
PAYMENT DUE BY	04/02/2012

your services

- Phone Service
- BroadBand
- WorkSafe

service alerts and ir

Issue with WorkSafe
14/03/2013

Intermittent phone service iss
04/03/2013 london &

Major Phone and Broadband
04/03/2013 london &

Service Alert...

TalkTalk Business
MyAccount

Service Alert Areas

Scottish

North Eastern

Northern

Midlands

Western

London & South

save loca

aka.ms/TTB

Mobile Services Overview

SDKs

Windows Store
iOS
Android
Xamarin

Windows Phone
iOS
Android
HTML 5/JS

REST API

Store Data in the Cloud

SQL
Table Storage
Blob Storage
Mongo DB

User Authentication

Faceboo
Twitter
Microsoft
Googl
Active Director

Push Notifications

WNS & MPNS
APNS
GCM
Notification Hubs

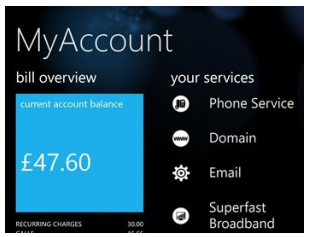
Scripts:

table
scheduled
custom API

Source Control

Supported Platforms

Native Windows	Native WinPhone	Native iOS	Native Android	HTML5/ Javascript	Xamarin (iOS & Android in C#)



Differentiating Characteristics of Enterprise Mobile	How Mobile Services Helps
Authentication via Active Directory	**Turnkey support for authentication via Azure AD**
Data tends to live on-premises	Mobile Services + Service Bus Relay = on-prem access
Higher data complexity & Heterogeneous data backends	Mobile Services works with any data backends and additional improvements planned
Repurposing existing systems/APIs for new scenarios	Mobile adds a mobility layer on top of an existing backend system
Enterprise push with per-device queue scenarios	Socket.io within Mobile Services scripts

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02 | Data

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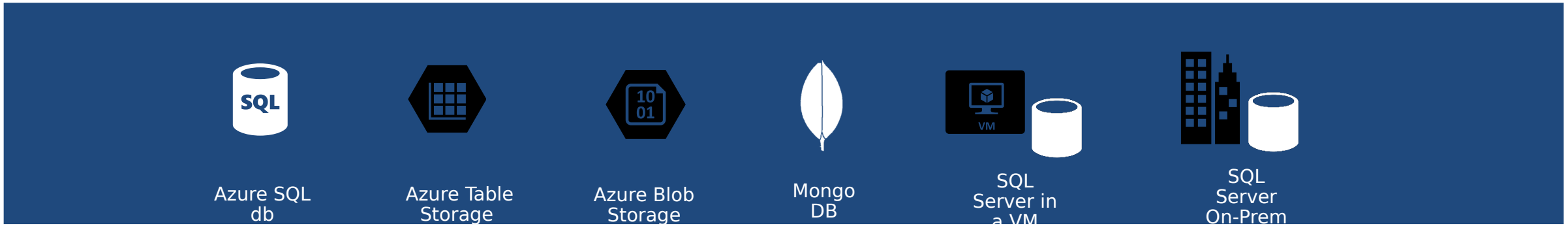
Data



- Azure SQL database out of the box
- Alternatively, use blob storage, table storage, SQL in a VM, or Oracle in a VM through the azure module for node.js or even on-prem SQL Server through Service Bus Relay
- Full control over your data in all scenarios

Enterprise Integration

- Integrating with a REST Service Bus Relay Service - Connect your Mobile Service with an application running on-premises (in your own datacenter) via Service Bus Relayed Messaging. This specific example deals with communicating over REST. Code is shown in C# on the client side. Sample is also applicable to SQL Server in an Azure VM.
- Integrating with a SOAP Service Bus Relay Service - Connect your Mobile Service with an application running on-premises (in your own datacenter) via Service Bus Relayed Messaging (another part of Windows Azure). This specific example deals with communicating over SOAP. Code is shown in C# on the client side. Sample is also applicable to SQL Server in an Azure VM.
- Integrating with Windows Azure BizTalk Services - This walkthrough explains how to integrate your Mobile Service with Windows Azure BizTalk Services so you can communicate with other resources either running in the cloud or on-premises. Code is shown in C# on the client side.
- Integrating with BizTalk Server via Service Bus - This walkthrough explains how to integrate your Mobile Service with other on-premises or cloud resources using BizTalk Server, Service Bus Brokered Messaging, and Service Bus Relayed Messaging. Code is shown in C# on the client side.

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03 | Business Logic

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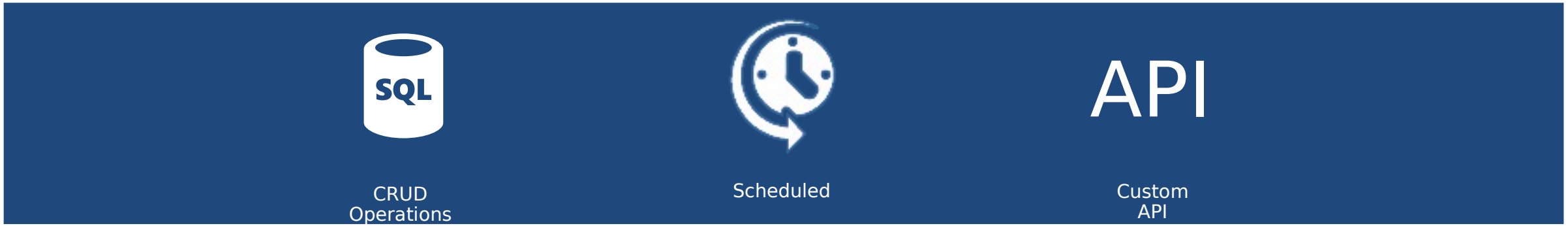
Business Logic



- Server-side scripting in node.js. C# coming soon:
  - Table CRUD operations
  - Scheduled scripts
  - Custom API
- Custom API enables advanced routing and sharing methods across scripts as well as extends support to not just JSON, but XML payloads

Extensibility

- Source Control + NPM enable:
  - Access to the entire suite of 1st party Windows Azure services
    - Notification Hubs, Worker Roles, Blob/Table Storage, HDInsight, etc.
  - Access to third party services available in the Windows Azure Store
    - New Relic, SendGrid, Pusher, Auth0, etc.
    - Consolidated on monthly Windows Azure bill
  - Access to any service with a node module
    - Twilio, Stripe, etc.

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DEMO

Source control for team development
NPM installing the azure module for node.js

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04 | Authentication

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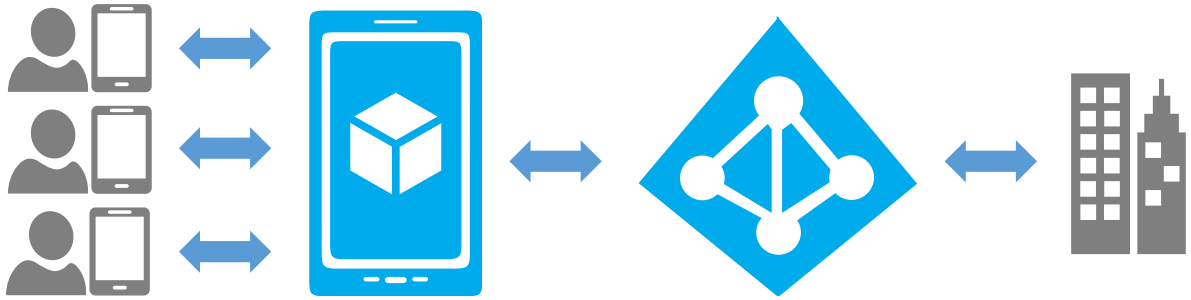
Mobile Services + Azure Active Directory

Bring turn-key login experience with corporate credentials to mobile developers

Enable applications built around organizational structures

Make AD users a first-class concept in Mobile Services, with push-to-user and per-user data



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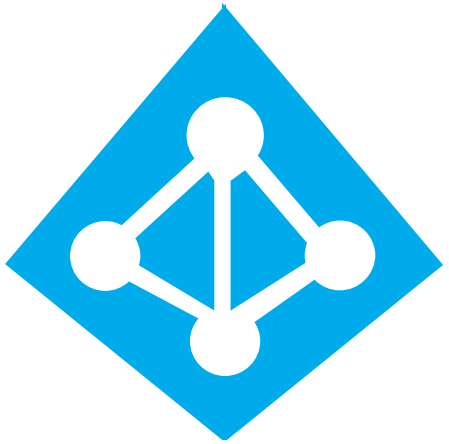
DEMO

Azure Active Directory Authentication

Azure Active Directory in Mobile Services

To gain access to the Azure Active Directory preview, email mobileservices@microsoft.com



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05 | Push Notifications

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Push Notification Challenges

While there are significant benefits to using push notifications in a mobile app, rolling your own push infrastructure is extremely difficult in terms of implementing a system capable of:

1. Cross-Platform Push Notifications

   Each push service (APNS for iOS, GCM for Android, WNS for Windows, etc.) has different protocols (e.g., HTTP vs. TCP, xml payload vs. JSON payload)

2. Targeting on the server-side based on interest and location

   Segmenting users based on interest tags and routing only the most relevant content to each segment

3. Personalizing notifications on the client-side based on language, currency, device, etc.

   Each device displays notifications differently

4. High-Volume with Low Latency

   Limited by the capability of each VM so need to spin up scores of VMs and shard your application in order to serve a large user base

5. Maintaining and accurate device handle registry

   Adding registrations upon installation, updating tags, pruning upon rejection from push notification service (uninstall)

Push

- Out of the box support for Windows (WNS), Windows Phone (MPNS), iOS (APNS) and Android (GCM) in Mobile Services
- Easy to extend to additional platforms like Mac OS or Kindle
- Azure module for node.js opens door the door to Notification Hubs for personalized push at scale

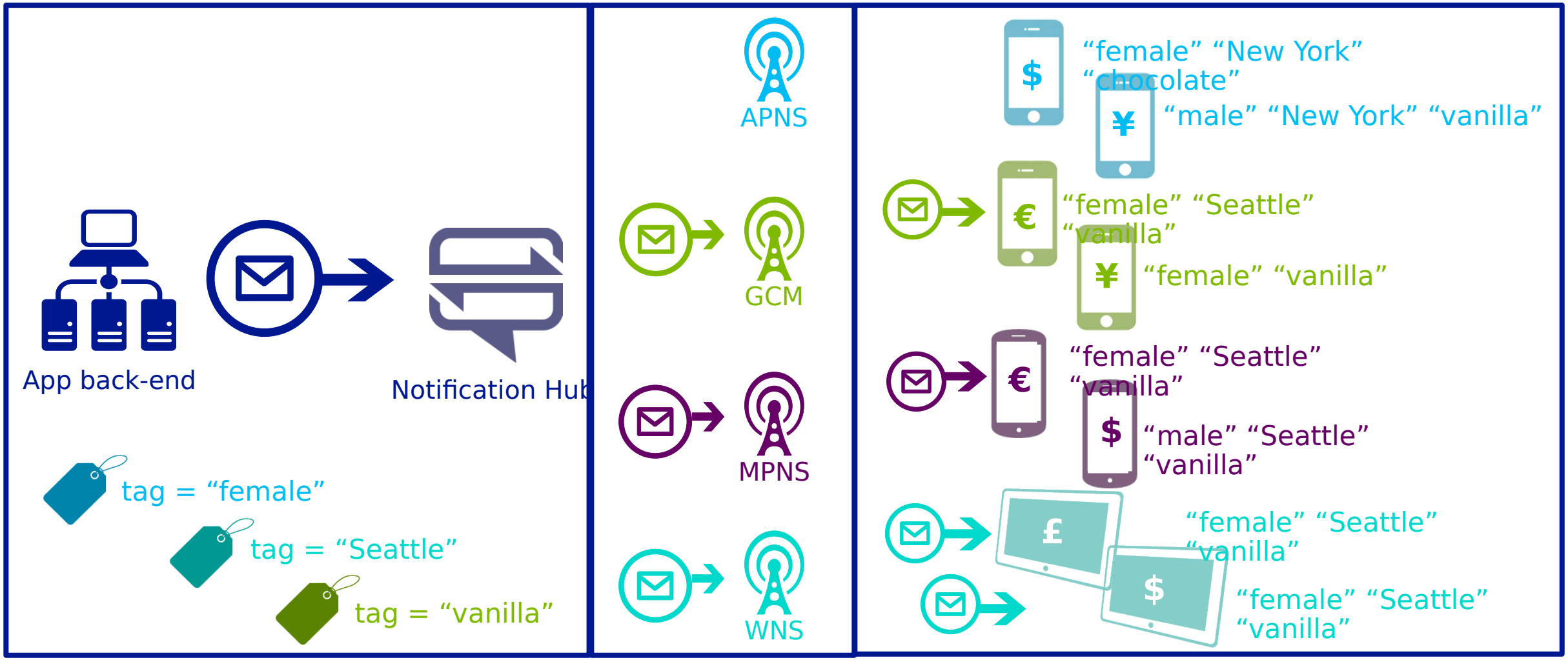
Corporate Travel Solution in APAC

Send cross-platform push notification in 1 API call

Format notifications for different devices

Segmented push based on travel plans and status

Notification Hubs Overview



Push Notifications for LOB apps

Make the employee effective…

- Workforce management (e.g. Red Praire)
  - Notifications: approvals, timecards, etc
- Warehouse management
  - Arrivals, trucks movement
- Document approval
- Point of Sale
- Hospitality and Travel (e.g. check-in)
-

Extending Push Notifications

Extend push capabilities to support enterprise scenarios

- ✓ Delivery acknowledgement
- ✓ End-to-End encryption
- ✓ Audit, etc

Available today through SignalR and Service Bus

Security in Notification Hubs

- ✓ Auth
  - Simple Shared Access Signature pattern: short-lived keys + signature
  - Federated auth using Access Control Service
- ✓ Protection
  - All operations to Hub over SSL
  - Requests are signed
- ✓ Role-based access
  - ✓ Separate claims for Send/Registration CUD/management ops
- ✓ Namespace-level and Hub-level isolation
- ✓ Audit/logging

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06 | Best Practices & Resources

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Best Practices for LOB apps

- **Mobile Services**
  - Use AD Authentication
  - Use Service Bus Relay for on-prem access
  - Use source control for team development
  - Make sure you're familiar with SQL basics
    - Did you index the right columns?
    - Run query analyzer on your queries
    - Look at your datamodel
- **Notification Hubs**
  - Use Notification Hubs for push
  - Use tags to define logical users / groups of users
  - Use templates for personalization / localization

Mobile Services Resourc

Windows Azure Mobile Services Overview, Tutorials and Resources
http://www.windowsazure.com/en-us/develop/mobile/

Collection of Helpful Tutorials and Resources
http://aka.ms/CommonWAMS

Learn/Channel 9
http://channel9.msdn.com/Series/Windows-Azure-Mobile-Services

SDKs on GitHub
https://github.com/WindowsAzure/azure-mobile-services/

REST API Reference
http://msdn.microsoft.com/en-us/library/windowsazure/jj710108.aspx

Windows Azure Pricing
https://www.windowsazure.com/en-us/pricing/calculator/

UserVoice for Feature Requests
http://feedback.windowsazure.com/forums/216254-mobile-services

Microsoft Azure Certified Training
http://www.microsoft.com/learning/en/us/training/azure.aspx

Notification Hubs Resour

Windows Azure Mobile Services Overview, Tutorials and Resources

Azure Documentation Center

MSDN Documenation

Android (tutorial)

iOS (tutorial)

Windows Store (tutorial)

Windows Phone(tutorial)

Learn/Channel 9

Introduction | iOS | Windows Store | Tags and Templates

REST API Reference

http://msdn.microsoft.com/en-us/library/windowsazure/jj710108.aspx

Windows Azure Pricing

http://www.windowsazure.com/en-us/pricing/details/notification-hubs/

Microsoft Azure Certified Training

http://www.microsoft.com/learning/en/us/training/azure.aspx

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